

***OCNOPERLA*, A NEW GENUS OF NORTH AMERICAN PERLODINAE  
(PLECOPTERA: PERLODIDAE)<sup>1</sup>**

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*Abstract.*—*Oconoperla weaveri*, a new genus and species of Perlodinae, is described from one adult male and five pre-emergent nymphs collected in mountainous North and South Carolina. *Oconoperla* appears to be most closely related to *Malirekus* Ricker. Descriptions are supported by SEM photomicrographs and original drawings.

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The most recent study of Nearctic Perlodinae (Ricker, 1952) recognized 13 subgenera of *Isogenus*. All of these have subsequently been given generic rank by Illies (1966) and Zwick (1973). This study reports the discovery of an adult male and five nymphs of a previously undescribed genus in this group. Nymphs were associated by dissecting adult genitalia from specimens which died during emergence. Methodology follows Stark and Stewart (1981).

***Oconoperla* Stark and Stewart NEW GENUS**

Type-species.—*Oconoperla weaveri*, n. sp.

Description.—*Size*: Medium sized, 12–14 mm in length.

*Mesosternum*: Y-ridge arms attached to posterior corners of furcal pits; transverse ridge present. Stem of Y-ridge short (Fig. 4).

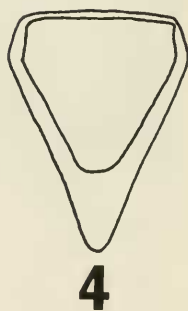
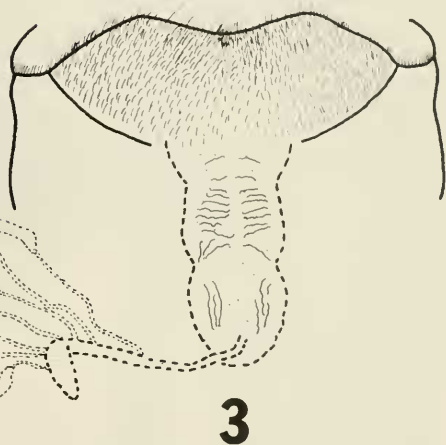
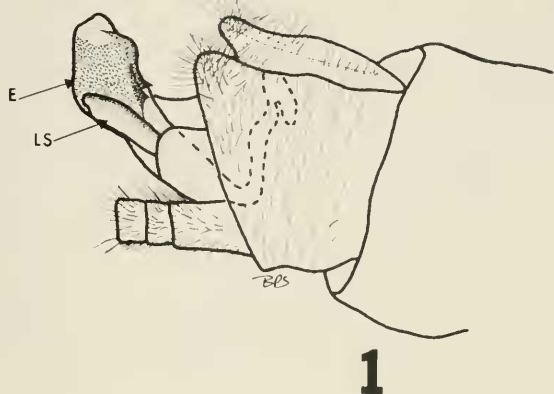
*Male 10th tergum*: Cleft extends to near anterior margin; hemitergal lobes rounded and covered apically with dense patch of long thin setae (Fig. 1).

*Epiproct*: Bulbous apically and covered dorsolaterally with small scale-like setae. Dorsal sclerite slender, almost needle-like; not reaching tip (Figs. 1, 2). Ventral sclerite well developed, sharply upturned over apex; 2 ventrally directed teeth at midlength (Fig. 1).

*Lateral stylets*: Not exceeding apex of epiproct in length; most heavily

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Figs. 1-4. *Oconoperla weaveri* adult structures. 1, Male terminalia, lateral (E = epiproct; LS = lateral stylet). 2, Epiproct, dorsal. 3, Female subgenital plate with vagina (dorsal aspect) inset. 4, Mesosternal grooves.

sclerotized along dorsal margin; ventral margin abruptly narrowed near apex to form truncate tip (Fig. 1).

*Ventral lobes:* Absent.

*Female subgenital plate:* Slightly produced and densely hairy; posterior margin truncate and emarginate mesally (Fig. 3).

*Nymphal lacinia:* Bicuspid; shorter subapical tooth strongly divergent from apical tooth. Apical tooth with groove along basal half of inner surface; slender, delicate sensillum located at base of tooth. Three or 4 prominent setae along inner margin of lacinia followed by row of smaller setae; base with patch of small setae near margin (Fig. 9).

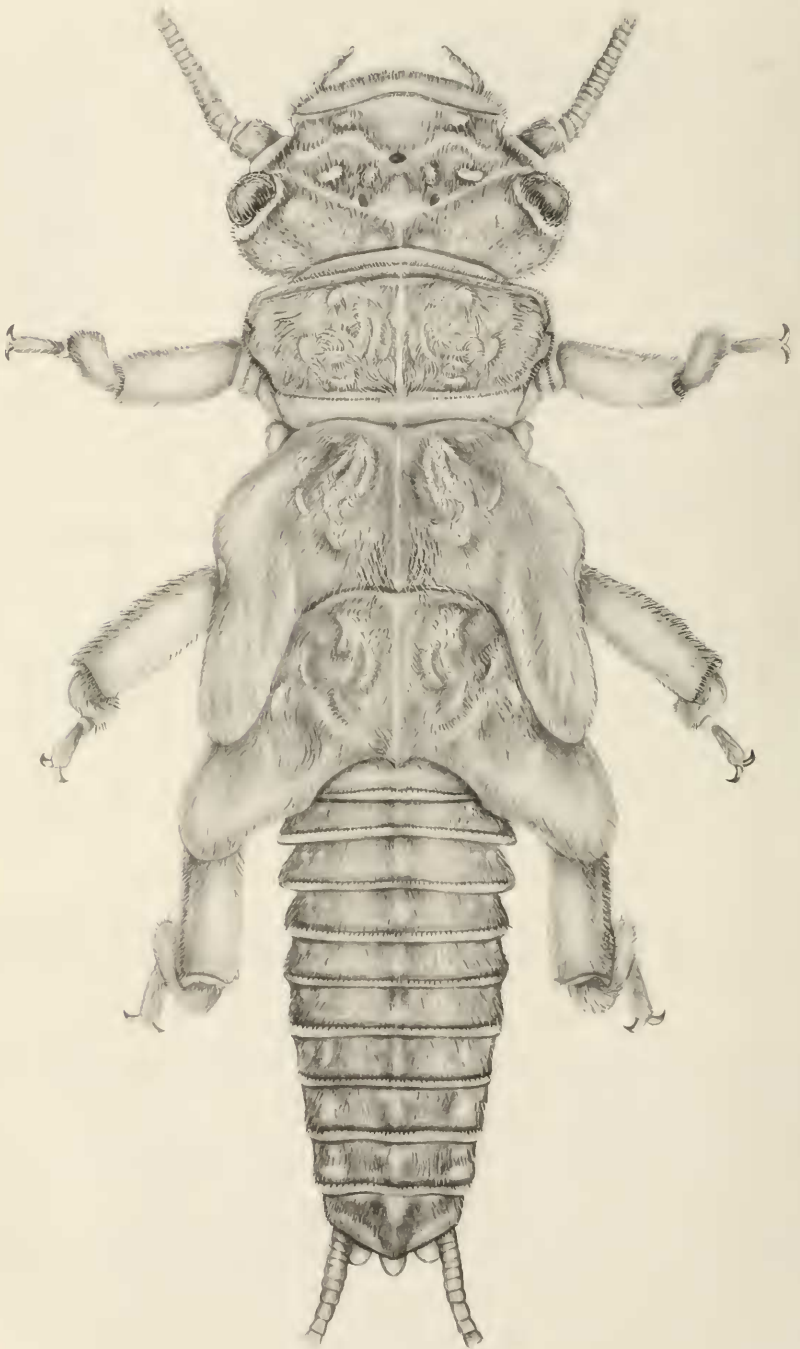
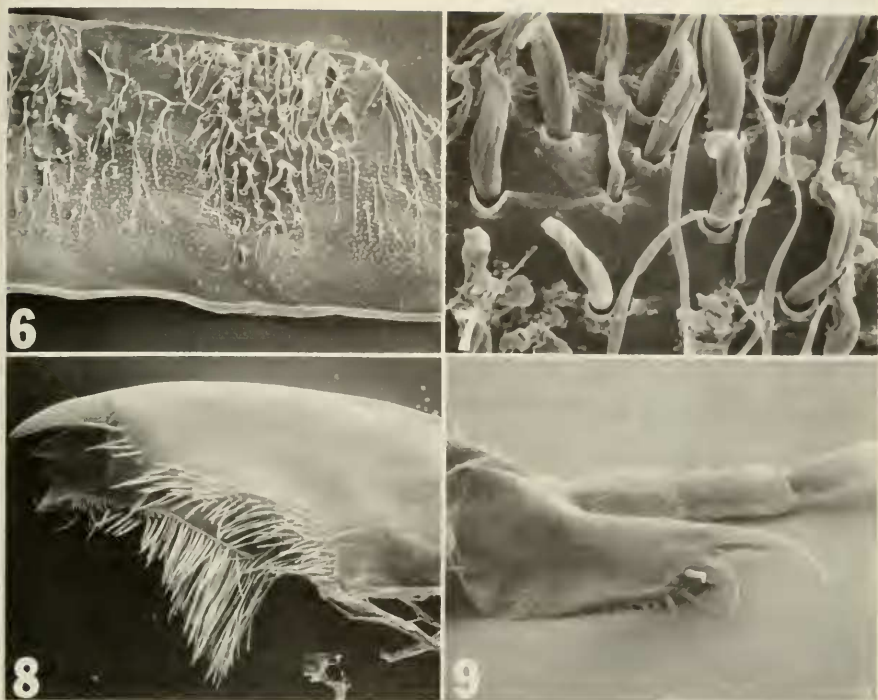


Fig. 5. *Oconoperla weaveri*, nymphal habitus.



Figs. 6–9. *Oconoperla weaveri*, SEM photomicrographs of nymphal structures. 6, Abdominal tergum 8, 200 $\times$ . 7, Detail of tergal setae, 1000 $\times$ . 8, Right mandible, 150 $\times$ . 9, Lacinia, 170 $\times$ .

*Nymphal mandibles*: Four major teeth; innermost tooth tridentate. Seriations absent. Marginal setal fringe covering ca.  $\frac{1}{2}$  of inner margin; ventral median setae forming an irregular linear patch; 4 prominent setae near base of apical tooth. Linear patch of stout spines near base of inner tooth on left mandible.

*Submental gills*: Not extending beyond lateral margins of submentum.

*Nymphal pronotum*: Posterolateral margins notched (Fig. 5).

Distribution.—Southern Appalachian Mountains.

Etymology.—The prefix, Ocono, is derived from Oconee, the South Carolina county in which the holotype was collected.

Diagnosis.—*Oconoperla* nymphs are distinguished from those of sympatric perlodinae genera (*Cultus*, *Diploperla*, *Helopicus*, *Hydroperla*, *Isogenoides*, *Malirekus*, *Remensus*, and *Yugus*) by the notched lateral pronotal margin and the densely hairy habitus (Fig. 5). *Yugus* and *Malirekus* nymphs bear the closest general resemblance to those of *Oconoperla*, but in both these genera the lacinia bears a short second tooth which arises unusually close to the apex of the major tooth, and a tuft of 4–5 large setae on a small

knob near the base of the second tooth. The lacinia of *Oconoperla* bears a longer, more divergent and proximally located second tooth and lacks a tufted knob on the inner margin (Fig. 9).

Five of the sympatric genera listed above have lateral stylets but only two of these (*Isogenoides* and *Hydroperla*) also share the presence of spines on the ventral epiproct sclerite with *Oconoperla*. Males of these two genera are additionally distinguished from those of *Oconoperla* by the presence of long submental gills.

The affinities of this unique genus will be clearer once eggs and adult females are available for study. Male genitalic structure is suggestive of a close relationship with the *Malirekus-Yugus* group of genera, but the apparent absence of synapomorphies in nymphal mouthparts (e.g., tufted lacinial knob, grooved inner margin of major lacinial tooth, isolated setal row near base of apical mandibular tooth) between *Oconoperla* and *Malirekus-Yugus* group suggests the relationship is a remote one.

### *Oconoperla weaveri* Stark and Stewart, NEW SPECIES

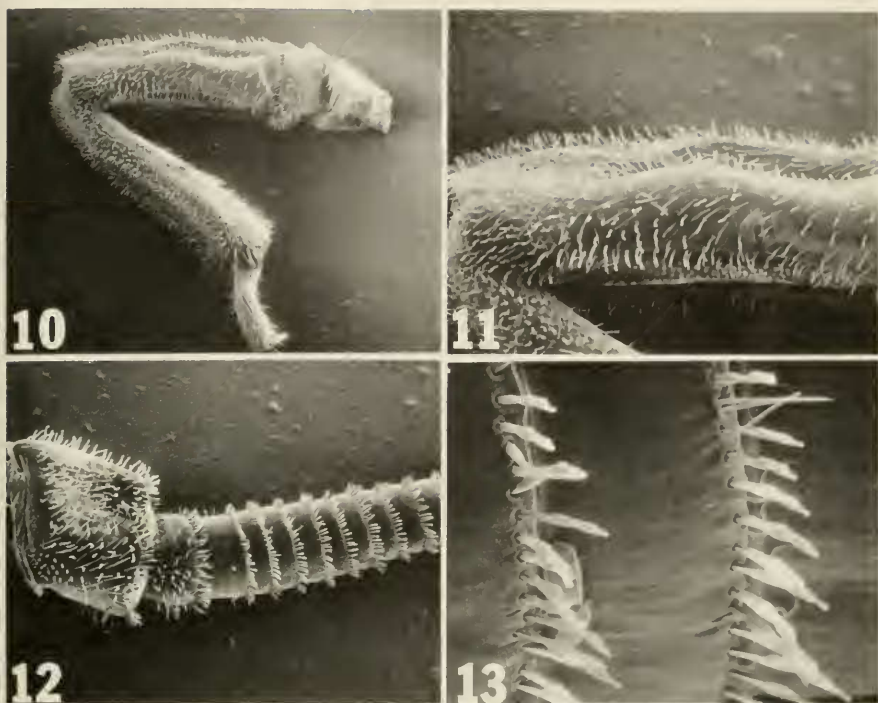
Figs. 1-13

Male.—Forewing length 14 mm; body length 11 mm. General color dark brown. Dorsum of head brown except for small pale spot posterior to ocelli. Pronotum brown with narrow yellow median stripe. Genitalia described above.

Female.—External genitalia from pre-emergent nymph described above. Vagina membranous; lateral margins sinuate. Spermatheca slender, membranous, bearing ca. 7 accessory glands in apical  $\frac{1}{2}$  (Fig. 3).

Nymph (Fig. 5).—General color brown patterned with yellow; membranous areas with purple-red pigment in living specimens. Head brown except for pale M-line and 2 pair small circular spots; smaller pair forward of M-line, larger pair lateral to ocelli and forward of ecdysial suture. Thoracic terga brown with scattered circular pale areas. Abdominal terga brown with double row pale spots on Ab 3-7 and mesal single row pale spots on Ab 6-9; additional expanded pale areas on Ab 6-10. Body densely hairy; occipital spinule row absent. Legs without fine silky setal fringe; femora without large socketed spinelike setae (Figs. 10, 11). Abdominal terga with dense mesal patch of short, thick curled setae (Figs. 6, 7).

Types.—Holotype  $\delta$  (USNM #100106) from Oconee Co., S.C., 0.5 mi E Hwy 107, Tamassee Rd., small spring at headwaters of Wash Branch, 22-V-1981, B. Stark and J. S. Weaver, deposited in the National Museum of Natural History, Washington, D.C. Paratypes: NORTH CAROLINA: Macon Co., Dirty John Crk, Wayah Bald, 18-IV-81, J. S. Weaver and R. Holzenthal, 2 nymphs (NTSU, BPS); Rattlesnake Spring, Wayah Bald, 18-IV-1981, J. S. Weaver and R. Holzenthal, 1 nymph (BPS); Rattlesnake Spring,



Figs. 10–13. *Oconoperla weaveri*, SEM photomicrographs of nymphal structures. 10, Foreleg, anterior aspect, 58 $\times$ . 11, Femur, anterior aspect, 125 $\times$ . 12, Antenna, basal segments, 100 $\times$ . 13, Detail of antennal setation, 1000 $\times$ .

Wayah Bald, 26-V-1981, B. Stark and J. S. Weaver, 2 nymphs (USNM, BPS).

**Etymology.**—This species is named in honor of John S. Weaver, III.

**Ecological note.**—Nymphs of *O. weaveri* were found under rocks in splash zones of small spring seeps. Additional rarely collected species taken at Wayah Bald with *Oconoperla* include *Viehoperla ada* (Needham and Smith), *Isooperla distincta* Nelson, and *Beloneuria georgiana* (Banks).

#### ACKNOWLEDGMENTS

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